

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization

International Bureau



(10) International Publication Number

WO 2015/166340 A3

(43) International Publication Date
5 November 2015 (05.11.2015)

(51) International Patent Classification:
G01J 3/46 (2006.01) *G01J 3/02* (2006.01)
B01F 13/10 (2006.01) *A61B 5/00* (2006.01)
G01J 3/50 (2006.01) *G01N 21/84* (2006.01)
G01N 21/31 (2006.01)

(21) International Application Number:
PCT/IB2015/000724

(22) International Filing Date:
25 March 2015 (25.03.2015)

(25) Filing Language:
English

(26) Publication Language:
English

(30) Priority Data:
61/984,861 27 April 2014 (27.04.2014) US
61/984,798 27 April 2014 (27.04.2014) US
61/985,331 28 April 2014 (28.04.2014) US
PCT/IB2014/064809
24 September 2014 (24.09.2014) IB
PCT/IL2014/050850
28 September 2014 (28.09.2014) IL
62/106,426 22 January 2015 (22.01.2015) US

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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: APPARATUS AND METHOD FOR ANALYZING HAIR AND/OR PREDICTING AN OUTCOME OF A HAIR-COLORING TREATMENT

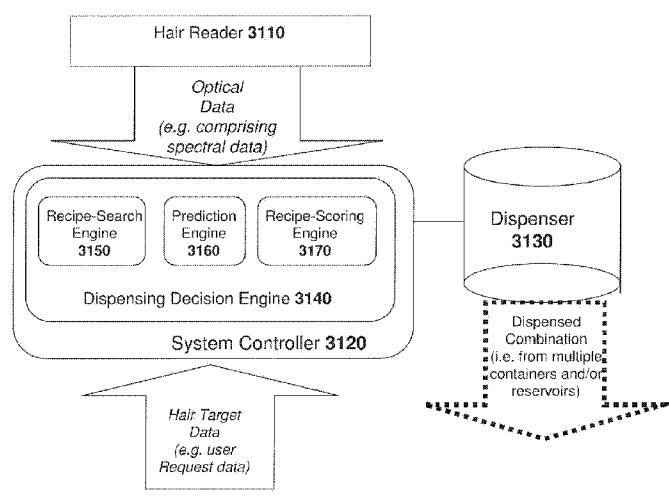


FIG. 1

(57) Abstract: The present disclosure relates to devices and methods for analyzing hair and/or predicting an outcome of hair-coloring treatment. Disclosed is method of predicting a result of a hair-color-modifying treatment on a sample of hair, the method comprising: a. for each given region of a plurality of distinct regions, respectively measuring a region-specific spectrum of respective material of the hair-sample respectively disposed within the given region; and b. computing first and second predicted post-treatment spectra respectively from first and second initial spectra by respectively predicting a transformation of the first and second initial spectra following subjecting the sample of hair to the hair-color-modifying treatment, the first and second initial spectra being distinct and (i) derived from the plurality of measured region-specific spectra and/or (ii) corresponding to first and second of the measured region-specific spectra.



Published:

- *with international search report (Art. 21(3))*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

(88) Date of publication of the international search report:

21 January 2016

INTERNATIONAL SEARCH REPORT

International application No PCT/IB2015/000724

A. CLASSIFICATION OF SUBJECT MATTER				
INV.	G01J3/46 A61B5/00	B01F13/10 G01N21/84	G01J3/50	G01N21/31
G01J3/02				
ADD.				
According to International Patent Classification (IPC) or to both national classification and IPC				
B. FIELDS SEARCHED				
Minimum documentation searched (classification system followed by classification symbols) G01J B01F G01N A45D A61B				
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched				
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) EPO-Internal, WPI Data				
C. DOCUMENTS CONSIDERED TO BE RELEVANT				
Category*	Citation of document, with indication, where appropriate, of the relevant passages			Relevant to claim No.
X	US 6 807 297 B1 (TANKOVICH NIKOLAI [US] ET AL) 19 October 2004 (2004-10-19) figures 2, 4			1,18,54, 57 1-16, 18-20, 23-28, 54-58
A	----- US 6 330 341 B1 (MACFARLANE DARBY SIMPSON [US] ET AL) 11 December 2001 (2001-12-11) column 3, line 24 - line 50; figures 4,5			18,57
Y	----- US 2007/159290 A1 (GROSSINGER NADAV [IL] ET AL) 12 July 2007 (2007-07-12) figure 1			1-16, 18-20, 23-28, 54-58
				-/-
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C.		<input checked="" type="checkbox"/> See patent family annex.		
<p>* Special categories of cited documents :</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&" document member of the same patent family</p>				
Date of the actual completion of the international search		Date of mailing of the international search report		
17 August 2015		16/11/2015		
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016		Authorized officer Rödig, Christoph		

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2015/000724

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2005/036677 A1 (LADJEVARDI MAHMOUD [US]) 17 February 2005 (2005-02-17) paragraph [0046]; figure 1 -----	1-16, 18-20, 23-28, 54-58

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2015/000724

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.: because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-16, 18-20, 23-28, 54-58

Remark on Protest

The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-16, 18-20, 23-28, 54-58

predicting the result of a hair treatment based on measured region-specific spectra/colorimetric data

2. claims: 29-33, 39, 59-62

spectral imaging method, in which light is spectrally dispersed in the image plane

3. claims: 17, 21, 22, 34-38, 40-44

imaging method transforming elongated regions having specific aspect ratios from the object plane to the image plane

4. claims: 45-53, 63

correlation between scalp and hair spectra

INTERNATIONAL SEARCH REPORT

Information on patent family members

 International application No
 PCT/IB2015/000724

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
US 6807297	B1	19-10-2004	AU 4302401 A EP 1254424 A1 US 6807297 B1 WO 0155956 A1	07-08-2001 06-11-2002 19-10-2004 02-08-2001
US 6330341	B1	11-12-2001	AR 002426 A1 AU 6315996 A CA 2222223 A1 CA 2322762 A1 CA 2322765 A1 EP 0836704 A1 US 6067504 A US 6314372 B1 US 6330341 B1 WO 9641139 A1	11-03-1998 30-12-1996 19-12-1996 19-12-1996 19-12-1996 22-04-1998 23-05-2000 06-11-2001 11-12-2001 19-12-1996
US 2007159290	A1	12-07-2007	AU 2007205686 A1 BR PI0706856 A2 CA 2636480 A1 CN 101394764 A CN 104390706 A DK 1976410 T3 EP 1976410 A1 ES 2469617 T3 HK 1121007 A1 JP 4884483 B2 JP 2009522585 A US 2007159290 A1 WO 2007080585 A1 ZA 200806771 A	19-07-2007 05-04-2011 19-07-2007 25-03-2009 04-03-2015 10-06-2014 08-10-2008 18-06-2014 08-08-2014 29-02-2012 11-06-2009 12-07-2007 19-07-2007 27-05-2009
US 2005036677	A1	17-02-2005	AT 459062 T EP 1428168 A1 US 2005036677 A1 US 2007100555 A1 WO 03012728 A1	15-03-2010 16-06-2004 17-02-2005 03-05-2007 13-02-2003